UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,061	01/28/2004	Alwin Lee	32052-8295.US	2327

25096 7590 12/08/2008

PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

EXAMINER	
RILEY, MARCUS T	

ART UNIT	PAPER NUMBER
2625	

MAIL DATE	DELIVERY MODE
12/08/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/765,061	LEE ET AL.	
	Examiner	Art Unit	
	MARCUS T. RILEY	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *1,8,14 and 19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-7,9-13,15,17,18 and 20-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 July 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/14/2004; 07/26/2006* .
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is responsive to the applicant's remarks received on August 11, 2008. **Claims 1-24** are pending.

Response to Arguments

2. Applicant's arguments with respect to amended **claims 2, 3, 5, 9-13, 15, 17, 18 & 20,** and newly added **claims 21-24** filed on August 11, 2008 have been fully considered but they are not persuasive.

A: Applicant's Remarks

A. Response to the Section 103(a) Rejection of Claims 1, 2, 5, 8-11, 14 and 17-20 (Koga and Kanemitsu)

Claims 1, 2, 5, 8-11, 14 and 17-20 were rejected under Section 103(a) as being unpatentable over Koga in view of Kanemitsu. Claims 1, 8, 14, and 19 have been cancelled and, accordingly, the rejection of these claims is now moot. The undersigned attorney wishes to thank the Examiner for providing a detailed explanation of his position regarding these references during the July 14th telephone conference. For at least the reasons explained below, the applied references cannot support a Section 103 rejection of claims 2, 5, 9-11, 17, 18, and 20. As discussed during the July 14th telephone conference, the applied references fail to disclose or suggest all the claimed features. Independent claim 2, for example, recites "cutting transversely the entirety of said condensed area" in combination with "cutting vertically the entirety of said

transversely cut area into several individual areas." According to the Office Action, Koga describes transversely and vertically cutting a condensed area. (Office Action, p. 12.) Applicant respectfully disagrees with this interpretation of Koga. As discussed during the July 14th telephone conference, Koga actually describes reducing an image by removing selected pixels. (Koga, col. 33, line 66 - col. 34, line 10.) Koga describes that an image can be reduced by half in the vertical and horizontal directions (e.g., an 8 pixel by 8 pixel image is reduced to a 4 pixel by 4 pixel image) by such removal of pixels. (Id.) Koga does not describe what is done to the removed pixels, but implies that no processing of the removed pixels is performed. In contrast, claim 2 recites that after the entirety of the condensed area has been transversely and vertically cut into individual areas, individual areas with images are marked as an image area, and individual areas with characters are marked as a character area. Because Koga does not teach or suggest "cutting transversely the entirety of said condensed area" or "cutting vertically the entirety of said transversely cut area into several individual areas," Koga does not teach or suggest all the features of claim 2. Kanemitsu fails to cure the deficiencies of Koga with respect to claim 2. Accordingly, for at least this reason, claim 2 is patentable over the combination of Koga and Kanemitsu.

Independent claim 5, as amended, includes several features generally similar to those of claim 2 (e.g., "cutting transversely the entirety of the condensed master copy into additional first individual areas" in combination with "cutting vertically the entirety of the master copy into additional first individual areas"). As discussed above with respect to claim 2, Koga fails to teach or suggest these features, and Kanemitsu fails to cure Koga's deficiencies. Claim 5 further recites "if the first individual area does not include either an image portion or a text portion,

then ... replacing the first background color with the second background color." According to the Office Action, Koga describes replacing a first background color with a second background color. (Office Action, p. 15.) Applicant respectfully disagrees with this interpretation of Koga.

As discussed during the July 14th telephone conference, Koga actually describes repeating a process for discriminating image segments until there are no longer any undiscriminated image segments. (Koga, col. 14, lines 56-60.) Koga describes a background color extraction step in which the colors of an intermediate image segment are analyzed. (Koga, col. 11, lines 50-55.) However, Koga does not describe performing the replacement of a first background color with a second background color, as recited in claim 5. Koga does not teach or suggest all the features of claim 5. Kanemitsu also fails to cure the deficiencies of Koga with respect to claim 5. Accordingly, for at least the foregoing reasons, claim 5 is patentable under Section 103 over the combination of Koga and Kanemitsu.

Independent claims 9 and 20, as amended, include several features generally similar to those of claim 2. For example, claim 9 recites "cutting transversely the entirety of said condensed area" in combination "cutting vertically the entirety of said transversely cut area into several individual areas," and claim 20 reciting "a component configured to transversely and vertically cut the entirety of the condensed area." As noted above with respect to claim 2, Koga does not teach or suggest these features, and Kanemitsu fails to cure Koga's deficiencies. For at least the foregoing reasons, the Section 103 rejections of claims 9 and 20 should be withdrawn. Claims 10 and 11 have been amended to depend from base claim 9, and claims 17 and 18 have been amended to depend from base claim 20. Accordingly, the Section 103 rejections of

dependent claims 10, 11, 17 and 18 should be withdrawn for at least the foregoing reasons, and for the additional features of these dependent claims.

A: Examiner's Response

Claims 1, 2, 5, 8-11, 14 and 17-20 were rejected under Section 103(a) as being unpatentable over Koga in view of Kanemitsu.

For least the reasons explained below, the applied references supports a Section 103 rejection of claims 2, 5, 9-11, 17, 18, and 20.

As discussed during the July 14th telephone conference, the applied references did not fail to disclose or suggest all the claimed features. Independent claim 2, recites "*cutting transversely the entirety of said condensed area"* in combination with *"cutting vertically the entirety of said transversely cut area into several individual areas."* Examiner respectfully disagrees with Applicant's interpretation of the applied reference. Koga describes transversely and vertically cutting the entire condensed area. See 103 rejection below and also see Fig. 45 where the entire image is reduced by cutting ½ vertically and horizontally and then the image created is divided into vertically and horizontally. Because, Koga either alone or in combination discloses, teaches or suggests "cutting transversely the entirety of said condensed area" or "cutting vertically the entirety of said transversely cut area into several individual areas," Koga does teach or suggest all the features of claim 2. Accordingly, for at least this reason, claim 2 is not patentable over the combination of Koga and Kanemitsu.

Independent claim 5, as amended, includes several features generally similar to those of claim 2. As discussed above with respect to claim 2, Koga either alone or in combination discloses, teaches or suggests these features. Claim 5 further recites "if the first individual area does not include either an image portion or a text portion, then ... replacing the first background color with the second background color." Examiner relies on Koga where the image-segmentation step is repeated until there are no longer any undiscriminated image segments and as a result, replaces a first background color with a second background color. Therefore, Koga either alone or in combination discloses, teaches or suggests these features of claim 5. Accordingly, for at least the foregoing reasons, claim 5 is not patentable under Section 103 over the combination of Koga and Kanemitsu.

Independent claims 9 and 20, as amended, include several features generally similar to those of claim 2. As noted above with respect to claim 2, Koga either alone or in combination discloses, teaches or suggests these features. For at least the foregoing reasons, the Section 103 rejections of claims 9 and 20 are not withdrawn.

Claims 10 and 11 have been amended to depend from base claim 9, and claims 17 and 18 have been amended to depend from base claim 20. Accordingly, the Section 103 rejections of dependent claims 10, 11, 17 and 18 are not withdrawn.

B: Applicant's Remarks

B. Response to the Section 103(a) Rejection of Claims 3, 6, 12, 13 and 15 (Koga and Kanemitsu)

Claims 3, 6, 12, 13 and 15 were rejected under Section 103(a) over the combination of Koga and Kanemitsu. Claim 3 has been amended to depend from base claim 2, claim 6 depends from base claim 5, claims 12 and 13 have been amended to depend from base claim 9, and claim 15 has been amended to depend from base claim 20. As discussed above, Koga and Kanemitsu fail to disclose or suggest all the features of claims 2, 9 and 20. Accordingly, claims 3, 6, 12, 13 and 15 are allowable over the combination of Koga, Kanemitsu, and for at least the reason that these references, either alone or in combination, fail to disclose or suggest the features of base claims 2, 5, 9 and 20, and the additional features of corresponding dependent claims 3, 6, 12, 13 and 15. Therefore, the Section 103 rejections of dependent claims 3, 6, 12, 13 and 15 should be withdrawn.

B: Examiner's Response

Claims 3, 6, 12, 13 and 15 were rejected under Section 103(a) over the combination of Koga and Kanemitsu because they either alone or in combination teaches, discloses or suggest the features of claims 3, 6, 12, 13 and 15. Claim 3 has been amended to depend from base claim 2, claim 6 depends from base claim 5, claims 12 and 13 have been amended to depend from base claim 9, and claim 15 has been amended to depend from base claim 20. As discussed above and in the rejections below, Koga and Kanemitsu does not fail to disclose or suggest all the features of claims 2, 9 and 20.

Accordingly, claims 3, 6, 12, 13 and 15 are not allowable over the combination of Koga, Kanemitsu, because they either alone or in combination teaches, discloses or suggest the features of claims 2, 5, 9 & 20 and the additional features of corresponding dependent claims 3, 6, 12, 13

and 15. Thus, the Section 103 rejections of dependent claims 3, 6, 12, 13 and 15 are not withdrawn.

C: Applicant's Remarks

C. Response to the Section 103(a) Rejection of Claims 4, 7 and 16 (Koga, Kanemitsu, and Bearss)

Claims 4, 7 and 16 were rejected under Section 103(a) as unpatentable over Koga in view of Kanemitsu and Bearss. Claim 4 depends from base claim 2, claim 7 depends from base claim 5, and claim 16 depends from base claim 20. As discussed above, Koga and Kanemitsu fail to disclose or suggest all the features of claims 2, 5 and 20. Bearss is relied on in the Office Action for describing a dithering process that comprises a sampling mode dithering. (Office Action, pp. 30 and 31.) Even assuming for the sake of argument that this is correct (and the applicants expressly do not), Bearss fails to cure the above-noted deficiencies of Koga and Kanemitsu to support Section 103 rejections of base claims 2, 5 and 20. Accordingly, claims 4, 7 and 16 are allowable over the combination of Koga, Kanemitsu, and Bearss for at least the reason that these references, either alone or in combination, fail to disclose or suggest the features of claims 2, 5 and 20, and the additional features of corresponding dependent claims 4, 7 and 16. Therefore, the Section 103 rejections of dependent claims 4, 7 and 16 should be withdrawn. D. New Claims 21-24 New claims 21-24 have been added to the present application. The subject matter of these claims is supported by the figures and text of the original application. Therefore, these claims do not add any new matter to the application and are fully supported under 35 U.S.C. § 112, first paragraph.

C: Examiner's Response

Claims 4, 7 and 16 were rejected under Section 103(a) as unpatentable over Koga in view of Kanemitsu and Bearss. Claim 4 depends from base claim 2, claim 7 depends from base claim 5, and claim 16 depends from base claim 20. As discussed above and in the rejections below, Koga and Kanemitsu either alone or in combination teaches, discloses or suggest the features of claims 2, 5 and 20. Bearss describes a dithering process that comprises a sampling mode dithering (*"FIG. 2 is a **block diagram of a threshold dither matrix** embodying orphan pixels according to the present invention."* column 4, lines 23-24).See also (*"As will be understood by those of ordinary skill in the art, the placement of orphan pixels in FIG. 2 is merely exemplary, and **variations may also serve for a 3.times.3 sampling/detection window**. Moreover, the orphan placement may also vary given a different size window, such as for a 5.times.5 area window, a 1.times.3 area window, or **for a multiple sampling/detection window configuration**."* column 6, lines 42-47).. Thus, Bearss does not fail to cure the above-noted deficiencies of Koga and Kanemitsu to support Section 103 rejections of base claims 2, 5 and 20.

Accordingly, claims 4, 7 and 16 are not allowable over the combination of Koga, Kanemitsu, and Bearss because they either alone or in combination teaches, discloses or suggest the features of claims 2, 5 and 20. Thus, the rejections of dependent claims 4, 7 and 16 are not withdrawn. As a result, the application is not in condition for allowance.

Claim Objections

3. The previous objection of **claim 20** is withdrawn in light of the applicant's amendments.

4. The following is a quotation of 37 CFR 1.75(a):

> The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

5. **Claim 24** is objected to under 37 CFR 1.75(a), as failing to particularly point out and distinctly claim the subject matter which application regards as his invention or discovery.

Regarding claim 24; Claim 24 states in part wherein the method is carried out in at least *"...one of a scanner and a fax."* It is not understood whether the method is carried out only in scanner or in conjunction with a fax. It is assumed for continued examination purposes that claim 24 is intended to read *"...one of a scanner or a fax."* Suggest deleting *"and"* and replacing it with "*or*".

Appropriate correction required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 2, 3, 5, 6, 9-13, 15, 17, 18, 20-22 &24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Koga et al. (US 6,556,711 B2, hereinafter Koga '711) in combination with Kanemitsu et al. (US 4,996,603, hereinafter Kanemitsu '603).

Regarding claim 2; Koga '711 discloses a method further detecting images and characters in a master copy, the method comprising: ("*...the foregoing object is attained by providing an* ***image processing method*** *comprising an* ***input step of inputting a color image, an extraction step of extracting image segments****, which have characteristics* ***different from a background image segment of the inputted color image,*** *from the color image, and a*

discrimination step of ***discriminating the characteristics of each image segment extracted at the extraction step.*** *"* column 3, lines 60-67);

determining a background color of said master copy (*"FIG. 7 is a diagram showing the detailed procedure of the* ***background image segmentation step 22. A background color extraction step 211 analyzes the colors of the inputted intermediate image segment and judges whether the inputted intermediate image segment contains a color indicative of a background image segment.*** *"* column 11, lines 50-55);

and separating content of the master copy into at least one image and at least one character based at least in part on said background color (" *In FIG. 36, a background color extraction step 221 analyzes the colors of the inputted intermediate image segment and* ***extracts the color of the background image segment.*** *"* column 28, lines 11-14).

Koga '711 discloses condensing master copy into a condensed area based at least in part on said background color (*"Here the* ***reduced image is obtained by reducing the size of the input image*** *in the horizontal and vertical directions..."* column 33, lines 57-59);

cutting transversely the condensed area (*"...an* ***image reduced by ½ vertically and horizontally can be created.***" column 34, lines 9-11);

cutting vertically the transversely cut area into several individual areas (*"The* ***input image is divided into blocks 3101 of two pixels vertically and two pixels horizontally (for a total of four pixels) shown in FIG. 45,*** *and one pixel in each block (say a pixel 3102 in the upper left-hand corner) is made one corresponding pixel 3103 of the reduced image,* ***whereby an image reduced by ½ vertically and horizontally can be created.***" column 34, lines 5-11);

choosing a second background color from at least **one of said individual areas** (**"...*and second extraction means for extracting an image segment from the input color image using data of the image segment extracted by the first extraction means.***" column 4, lines 22-25);

marking said at least one of said individual areas with image as an image area (*"In the second embodiment, however, a binary image compressed by a compression method stored in the compressed-data header* ***is registered as "image-segment shape".*** *"* column 22, lines 39-42);

marking at least one of said individual areas with character as a character area ("***FIGS. 30A and 30B*** *are diagrams showing the form of image-segment data contained in compressed image-segment data. Image-segment data whose form is either of two types is held in dependence upon the image-segment component. More specifically,* ***in case of a "limited-color character*** *or line-drawing image segment", a "limited-color pseudo-halftone image segment",* ***a "limited-value character or line-drawing image segment"*** *or a "limited-value pseudo-halftone image segment", image-segment data of the form shown in FIG. 30A is held. ..."* column 22, lines 26-35);

utilizing second background color to condense individual areas and repeating said condensing of said individual areas if said image area and the character area of the individual areas are not identifiable (*"It should be noted that* ***quantization may be performed again*** *when the color histogram is created. For example,* ***in a case where an image of eight bits per R, G, B has been inputted, creating a color histogram while re-quantizing to four bits or seven bits results in a more complicated process.*** *However, the memory size for storing the histogram can be reduced. An additional effect is that even if the color of the background image segment is uneven, a background image segment can be segmented in stable fashion."* column 12, lines 14-23).

Koga '711 does not expressly disclose processing image areas with halftone processing; processing text areas with line art processing; outputting the processed images and processed text as a whole.

Kanemitsu '603 discloses processing image areas with halftone processing ("***When the circuit 3 detects a photo portion, the half-tone signal HTS is selected.***" column 4, lines 38-39);

processing text areas with line art processing ("*In the selection circuit 4, when the circuit 3 detects a* ***character portion, the fixed slice signal FSS is selected.***" column 6, lines 36 and 37);

outputting the processed images and processed text as a whole (*"Ref FIG. 1 is a schematic block diagram of a general image processing system. In FIG. 1, reference number 100 denotes an original image of a document to be scanned, 101 an image scanner, 102 a personal computer with a display (CRT), 103 a laser printer and 104 an image reproduced by the printer. The original image includes characters, ruled lines, and photos. They are scanned by the image scanner 101 and converted to a multi-level signal and then converted to a binary signal having values of "0" or "1". The binary*

signal is input into the personal computer 102 and printed by the laser printer 103 so that the original image can be reproduced." column 3, lines 1-13).

Koga '711 and Kanemitsu '603 are combinable because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by processing images with halftone processing, processing text with line art processing and outputting the processed images and processed text as a whole as taught by Kanemitsu '603. The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed."* Koga '711 at column 3, lines 55-58). Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 2.

Regarding claim 3; Koga '711 as modified does not expressly disclose wherein said halftone processing comprises a dithering process.

Kanemitsu '603 discloses wherein the halftone processing comprises a dithering process ("*...the multi-level signal of the photo portions of the original image is binary-coded by* ***the half-tone processing method based on dithering for binary coding the multi-level signal based on a predetermined dither pattern.***" column 3, lines 19-23).

Koga '711 and Kanemitsu '603 are combinable with Kanemitsu '603 because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by adding wherein the halftone process comprise of a dithering process as taught by Kanemitsu '603. The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58). Therefore, it would have been obvious to combine Koga '711 and Kanemitsu '603 to obtain the invention as specified in claim 2.

Regarding claim 5; Koga '711 discloses choosing a first background color from the master copy (*"FIG. 7 is a diagram showing the detailed procedure of the* ***background image segmentation step 22. A background color extraction step 211 analyzes the colors of the inputted intermediate image segment and judges whether the inputted intermediate image segment contains a color indicative of a background image segment.***" column 11, lines 50-55);

wherein the master copy includes at least one first individual area, and wherein each first individual area includes at least one of an image portion and a text portion (" *FIG. 7 is a block diagram showing the construction of an image segmentation unit for* ***discriminating between a character/line-drawing image segment and a pseudo-halftone image segment;***" column5, lines 14 -17);

condensing the master copy based at least in part on the first background color (*"Here the* ***reduced image is obtained by reducing the size of the input image*** *in the horizontal and vertical directions...*" column 33, lines 57-59);

cutting transversely the entirely of the condensed master copy into additional first individual areas ("...*an* ***image reduced by ½ vertically and horizontally can be created***." column 34, lines 9-11);

cutting vertically the entirely of the master copy into additional first individual areas ("*The **input image is divided into blocks 3101 of two pixels vertically and two pixels horizontally (for a total of four pixels) shown in FIG. 45**, and one pixel in each block (say a pixel 3102 in the upper left-hand corner) is made one corresponding pixel 3103 of the reduced image, **whereby an image reduced by ½ vertically and horizontally can be created**.*" column 34, lines 5-11);

or each first individual area choosing a second background color from first individual areas ("***...and second extraction means for extracting an image segment from the input color image using data of the image segment extracted by the first extraction means***." column 4, lines 22-25);

determining where the first individual area includes an image portion or a text portion based at least in part on the second background color ("*...and second extraction **means for extracting an image segment from the input color image using data of the image segment** extracted by the first extraction means.*" column 4, lines 22-25);

if the first individual area includes an image portion, marking the first individual area as an image area ("*In the second embodiment, however, a binary image compressed by a compression method stored in the compressed-data **header is registered as "image-segment shape"**...*" column 22 lines 39-42);

if the first individual area includes a text portion, marking the first individual area as a text area ("***FIGS. 30A and 30B** are diagrams showing the form of image-segment data contained in compressed image-segment data. Image-segment data whose form is either of two types is held in dependence upon the image-segment component. More specifically, **in case of a "limited-color character** or line-drawing image segment", a "limited-color pseudo-halftone image segment", **a "limited-value character or line-drawing image segment"** or a "limited-value pseudo-halftone image segment", image-segment data of the form shown in FIG. 30A is held. ...*" column 22, lines 26-35);

if the first individual area does not include either an image portion or a text portion, then replacing the first background color with the second background color ("*Under the control of an image-segment discrimination control step 31, **the foregoing steps are repeated until there are no longer any undiscriminated image** segments. As a result, image-segment components of each image segment are discriminated*" column 14, lines 56-60);

condensing the first individual area based at least in part on the second background color ("*Here the **reduced image is obtained by reducing the size of the input image** in the horizontal and vertical directions...*" column 33, lines 57-59);

cutting transversely the first individual area into second individual areas ("*...an **image reduced by ½ vertically and horizontally can be created***." column 34, lines 9-11);

cutting vertically the first individual area into second individual areas ("*The **input image is divided into blocks 3101 of two pixels vertically and two pixels horizontally (for a total of four pixels) shown in FIG. 45**, and one pixel in each block (say a pixel 3102 in the upper left-hand corner) is made one corresponding pixel 3103 of the reduced image, **whereby an image reduced by ½ vertically and horizontally can be created.***" column 34, lines 5-11);

and for each second individual area determining whether the second individual area includes an image portion or a text portion based at least in part on the second background color ("*...and second extraction **means for extracting an image segment from the input color image using data of the image segment** extracted by the first extraction means.*" column 4, lines 22-25);

if the second individual area includes an image portion, marking the second individual area as an image area ("*In the second embodiment, however, a binary image compressed by a compression method stored in the compressed-data header **is registered as "image-segment shape".***" column 22, lines 39-42);

and if the second individual area includes a text portion, marking the second individual area as a text area ("***FIGS. 30A and 30B** are diagrams showing the form of image-segment data contained in compressed image-segment data. Image-segment data whose form is either of two types is held in dependence upon the image-segment component. More specifically, **in case of a "limited-color character** or line-drawing image segment", a "limited-color pseudo-halftone image segment", **a "limited-value character or line-drawing image segment"** or a "limited-value pseudo-halftone image segment", image-segment data of the form shown in FIG. 30A is held. ...*" column 22, lines 26-35);

Koga '711 does not expressly disclose processing images with halftone processing, processing text with line art processing and outputting the processed images and processed text as a whole.

Kanemitsu '603 discloses processing image areas with halftone processing ("***When the circuit 3 detects a photo portion, the half-tone signal HTS is selected.***" column 4, lines 38-39);

processing text areas with line art processing ("*In the selection circuit 4, when the circuit 3 detects a* ***character portion, the fixed slice signal FSS is selected.***" column 6, lines 36 and 37);

outputting the processed images and processed text as a whole ("*Ref FIG. 1 is a schematic block diagram of a general image processing system. In FIG. 1, reference number 100 denotes an original image of a document to be scanned, 101 an image scanner, 102 a personal computer with a display (CRT), 103 a laser printer and 104 an image reproduced by the printer. The original image includes characters, ruled lines, and photos. They are scanned by the image scanner 101 and converted to a multi-level signal and then converted to a binary signal having values of "0" or "1". The binary signal is input into the personal computer 102 and printed by the laser printer 103 so that the original image can be reproduced.*" column 3, lines 1-13).

Koga '711 and Kanemitsu '603 are combinable because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by processing image areas with halftone processing, processing text areas with line art processing and outputting the processed images and processed text as a whole as taught by Kanemitsu '603. The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed ("*An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58). Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 5.

Regarding claim 6; Koga '711 as modified does not expressly disclose where said halftone processing comprises a dithering process.

Kanemitsu '603 discloses the halftone processing is a dithering process (*"...the multi-level signal of the photo portions of the original image is binary-coded by* ***the half-tone processing method based on dithering for binary coding the multi-level signal based on a predetermined dither pattern****."* column 3, lines 19-23).

Koga '711 and Kanemitsu '603 are combinable because they are from same field of endeavor of an image processing apparatus (*"Image Processing System"* Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by making the halftone process comprise of a dithering process as taught by Kanemitsu '603. The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed."* Koga '711 at column 3, lines 55-58). Therefore, it would have been obvious to combine Koga '711 and Kanemitsu '603 to obtain the invention as specified in claim 5.

Regarding claim 9; discloses a method of detecting images and text in a master copy, the method comprising: (*"...the foregoing object is attained by providing an* ***image processing method*** *comprising an* ***input step of inputting a color image, an extraction step of extracting image segments****, which have characteristics* ***different from a background image segment of the inputted color image,*** *from the color image, and a discrimination step of* ***discriminating the characteristics of each image segment extracted at the extraction step****."* column 3, lines 60-67);

Koga '711 choosing a background color from said master copy (*"FIG. 7 is a diagram showing the detailed procedure of the* ***background image segmentation step 22. A background color extraction step 211 analyzes the colors***

of the inputted intermediate image segment and judges whether the inputted intermediate image segment contains a color indicative of a background image segment." column 11, lines 50-55);

dividing content of said master copy into images and text with said chosen background color as a criterion ("*In FIG. 36, a background color extraction step 221 analyzes the colors of the inputted intermediate image segment and* ***extracts the color of the background image segment.***" column 28, lines 11-14).

condensing the master copy into a condensed area based on at least in part the background color ("*Here the* ***reduced image is obtained by reducing the size of the input image*** *in the horizontal and vertical directions...*" column 33, lines 57-59);

cutting transversely the entirely of said condensed area ("*...an* ***image reduced by ½ vertically and horizontally can be created***." column 34, lines 9-11);

cutting vertically the entirely of the transversely cut area for dividing the original area into several individual areas ("*The* ***input image is divided into blocks 3101 of two pixels vertically and two pixels horizontally (for a total of four pixels) shown in FIG. 45****, and one pixel in each block (say a pixel 3102 in the upper left-hand corner) is made one corresponding pixel 3103 of the reduced image,* ***whereby an image reduced by ½ vertically and horizontally can be created***." column 34, lines 5-11);

choosing a second background color from at least one of said individual areas (***"...and second extraction means for extracting an image segment from the input color image using data of the image segment extracted by the first extraction means***." column 4, lines 22-25);

marking at least one of said individual areas with said images as an image area ("*In the second embodiment, however, a binary image compressed by a compression method stored in the compressed-data header* ***is registered as "image-segment shape".***" column 22, lines 39-42);

marking at least one of said individual areas with said text as a text area ("***FIGS. 30A and 30B*** *are diagrams showing the form of image-segment data contained in compressed image-segment data. Image-segment data whose form is either of two types is held in dependence upon the image-segment component. More specifically,* ***in case of a "limited-color character*** *or line-drawing image segment", a "limited-color pseudo-halftone image segment",* ***a "limited-value character***

or line-drawing image segment" *or a "limited-value pseudo-halftone image segment", image-segment data of the form shown in FIG. 30A is held. ..."* column 22, lines 26-35);

utilizing second background color to condense individual area and repeating the condensing if the image area and the text area of the individual areas are not identifiable (*"It should be noted that* ***quantization may be performed again*** *when the color histogram is created. For example,* ***in a case where an image of eight bits per R, G, B has been inputted, creating a color histogram while re-quantizing to four bits or seven bits results in a more complicated process.*** *However, the memory size for storing the histogram can be reduced. An additional effect is that even if the color of the background image segment is uneven, a background image segment can be segmented in stable fashion."* column 12, lines 14-23).

Koga '711 does not expressly disclose processing said images with halftone processing to present said images with a clear tone level graduation; processing said text with line art processing to clearly present the text; combining said processed images and processed text.

Kanemitsu '603 processing said images with halftone processing to present said images with a clear tone level graduation ("*When the circuit 3 detects a photo portion,* ***the half-tone signal HTS is selected.***" column 4, lines 38-39). See also (*"The object of the present invention is to provide an image processing system enabling clear reproduction of an original document including mixed characters, ruled lines, and photos."* column 2, lines 3-6);

processing said text with line art processing to clearly present the text (*"In the selection circuit 4, when the circuit 3 detects a* ***character portion, the fixed slice signal FSS is selected.***" column 6, lines 36 and 37);

combining said processed images and processed text (*"Ref FIG. 1 is a* ***schematic block diagram of a general image processing system. In FIG. 1****, reference number 100 denotes an original image of a document to be scanned, 101 an image scanner, 102 a personal computer with a display (CRT), 103 a laser printer and 104 an image reproduced by the printer.* ***The original image includes characters, ruled lines, and photos. They are scanned*** *by the image scanner 101 and converted to a multi-level signal and then converted to a binary signal having values of "0" or "1". The binary signal is input into the personal computer 102 and printed by the laser printer 103* ***so that the original image can be reproduced.***" column 3, lines 1-13).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by processing said images with halftone processing to present said images with a clear tone level graduation; processing said text with line art processing to clearly present the text; combining said processed images and processed text as taught by Kanemitsu '603. The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58). Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 9.

Regarding claim 10; Koga '711 discloses where the method is carried out in a scanner (*"...the color image input unit 1001 may be an input unit for* ***reading in an image by a color image scanner****..."* column 9, lines 18-20).

Regarding claim 11; Koga '711 discloses where the method is carried out in a fax (*"****The image processing apparatus and method described below*** *can be utilized in pixel-density conversion or zoomed output in a device, such as a color printer, which handles a color document image, in pixel-density conversion at the time of enlargement/reduction and output in a DTP system, and in pixel-density conversion and zoomed* ***output in a color facsimile****."* column 8, lines 22-28).

Regarding claim 12; Koga '711 as modified does not expressly disclose wherein processing said images with halftone processing to present said images with a clear tone level graduation includes processing said images with halftone processing to present said images with a clear tone level graduation divided into 1024 levels.

Kanemitsu '603 discloses wherein processing said images with halftone processing to present said images with a clear tone level graduation includes processing said images with halftone processing to present said images with a clear tone level graduation divided into 1024 levels (*"When the circuit 3 detects a photo portion, the half-tone signal HTS is selected."* column 4, lines 38-39). See also (*"The object of the present invention is to provide an image processing system enabling clear reproduction of an original document including mixed characters, ruled lines, and photos."* column 2, lines 3-6).

Koga '711 and Kanemitsu '603 are combinable because they are from same field of endeavor of an image processing apparatus (*"Image Processing System"* Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by adding wherein processing said images with halftone processing to present said images with a clear tone level graduation includes processing said images with halftone processing to present said images with a clear tone level graduation divided into 1024 levels as taught by Kanemitsu '603. The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed."* Koga '711 at column 3, lines 55-58). Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 9.

Regarding claim 13; Kanemitsu '603 discloses wherein processing said text with line art processing to clearly present the text includes processing said text with line art processing having two values for said text (*"The original image includes characters, ruled lines, and photos. They are scanned by the*

image scanner 101 and ***converted to a multi -level signal*** *and then converted to a binary signal* ***having values of "0" or "1".*** column 3, lines 6-10).

Regarding claim 20; Koga '711 discloses an apparatus that automatically detects images and text in a master copy, the apparatus comprising: ("*...the foregoing object is attained by providing an* ***image processing method*** *comprising an* ***input step of inputting a color image, an extraction step of extracting image segments****, which have characteristics* ***different from a background image segment of the inputted color image,*** *from the color image, and a discrimination step of* ***discriminating the characteristics of each image segment extracted at the extraction step****."* column 3, lines 60-67);

a component configured to determine a background color of the master copy ("*FIG. 7 is a diagram showing the detailed procedure of the* ***background image segmentation step 22. A background color extraction step 211 analyzes the colors of the inputted intermediate image segment and judges whether the inputted intermediate image segment contains a color indicative of a background image segment.***" column 11, lines 50-55);

a component configured to separate content of the master copy into images and text based at least in part on the background color ("*In FIG. 36, a background color extraction step 221 analyzes the colors of the inputted intermediate image segment and* ***extracts the color of the background image segment****."* column 28, lines 11-14).

a component configured to condense the master copy into a condensed area based at least in part on the background color (*"Here the* ***reduced image is obtained by reducing the size of the input image*** *in the horizontal and vertical directions..."* column 33, lines 57-59);

a component configured to transversely and vertically cut the entirety of the condensed area ("*...an* ***image reduced by ½ vertically and horizontally can be created***." column 34, lines 9-11).

Koga '711 does not expressly disclose a component configured to process the images with halftone processing; a component configured to process the text with line art processing; a component configured to combine the processed images and the processed text.

Kanemitsu '603 discloses a component configured to process the images with halftone processing (*"When the circuit 3 detects a photo portion,* ***the half-tone signal HTS is selected.*** *"* column 4, lines 38-39);

a component configured to process the text with line art processing (*"In the selection circuit 4, when the circuit 3 detects a* ***character portion, the fixed slice signal FSS is selected.*** *"* column 6, lines 36 and 37);

a component configured to combine the processed images and the processed text (*"Ref FIG. 1 is a* ***schematic block diagram of a general image processing system. In FIG. 1****, reference number 100 denotes an original image of a document to be scanned, 101 an image scanner, 102 a personal computer with a display (CRT), 103 a laser printer and 104 an image reproduced by the printer.* ***The original image includes characters, ruled lines, and photos. They are scanned*** *by the image scanner 101 and converted to a multi-level signal and then converted to a binary signal having values of "0" or "1". The binary signal is input into the personal computer 102 and printed by the laser printer 103* ***so that the original image can be reproduced.*** *"* column 3, lines 1-13).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by a component configured to process the images with halftone processing; a component configured to process the text with line art processing; a component configured to combine the processed images and the processed text as taught by Kanemitsu '603. The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58). Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 20.

Regarding claim 15; Koga '711 as modified does not expressly disclose wherein the component configured to process the images with halftone processing is further configured to process the images with a dithering process.

Kanemitsu '603 discloses wherein the component configured to process the images with halftone processing is further configured to process the images with a dithering process (*"...the multi-level signal of the photo portions of the original image is binary-coded by the half-tone processing method based on dithering for binary coding the multi-level signal based on a predetermined dither pattern."* column 3, lines 19-23).

Koga '711 and Kanemitsu '603 are combinable because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by adding wherein the component configured to process the images with halftone processing is further configured to process the images with a dithering process as taught by Kanemitsu '603. The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58). Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 20.

Regarding claim 17; Koga '711 discloses wherein the apparatus is a fax machine (*"**The image processing apparatus and method described below** can be utilized in pixel-density conversion or zoomed output in a device, such as a color printer, which handles a color document image, in pixel-density conversion at the time of enlargement/reduction and output in a DTP system, and in pixel-density conversion and zoomed **output in a color facsimile**."* column 8, lines 22-28).

Regarding claim 18; Koga '711 discloses wherein the apparatus is a copier (*"A color image output unit 1005 outputs the zoomed image data created by the adaptive zoom unit 1004 and stored in the zoomed-image memory 1008. The destination of this output is a display,* ***a printer or copier for making hard copies****, a communication line or an image storage device."* column 9, lines 52-56).

Regarding claim 21; Koga '711 discloses a method of detecting images and text in a master copy, the method comprising: : (*"...the foregoing object is attained by providing an* ***image processing method*** *comprising an* ***input step of inputting a color image, an extraction step of extracting image segments****, which have characteristics* ***different from a background image segment of the inputted color image,*** *from the color image, and a discrimination step of* ***discriminating the characteristics of each image segment extracted at the extraction step.***" column 3, lines 60-67);

choosing a first background color from the master copy ("*FIG. 7 is a diagram showing the detailed procedure of the* ***background image segmentation step 22. A background color extraction step 211 analyzes the colors of the inputted intermediate image segment and judges whether the inputted intermediate image segment contains a color indicative of a background image segment.***" column 11, lines 50-55);

wherein the master copy includes at least one first individual area, and wherein each first individual area includes at least one of an image portion and a text portion (" *FIG. 7 is a block diagram showing the construction of an image segmentation unit for* ***discriminating between a character/line-drawing image segment and a pseudo-halftone image segment;***" column5, lines 14 -17);

condensing the master copy based at least in part on the first background color (*"Here the* ***reduced image is obtained by reducing the size of the input image*** *in the horizontal and vertical directions..."* column 33, lines 57-59);

attempting to transversely divide the condensed master copy into additional first individual areas ("*...an* ***image reduced by ½ vertically and horizontally can be created***." column 34, lines 9-11);

attempting to vertically divide the condensed master copy into additional first individual areas ("*The* ***input image is divided into blocks 3101 of two pixels vertically and two pixels horizontally (for a total of four pixels) shown in FIG. 45****, and one pixel in each block (say a pixel 3102 in the upper left-hand corner) is made one*

corresponding pixel 3103 of the reduced image, ***whereby an image reduced by ½ vertically and horizontally can be created.***" column 34, lines 5-11);;

choosing a second background color from the first individual area ("*...and second extraction means for extracting an image segment from the input color image using data of the image segment extracted by the first extraction means.*" column 4, lines 22-25);

based at least in part on the second background color, attempting to determine whether a first individual area includes an image portion or a text portion ("***...and second extraction means for extracting an image segment from the input color image using data of the image segment extracted by the first extraction means.***" column 4, lines 22-25).

if the condensed master copy cannot be transversely divided into additional first individual areas, and the condensed master copy cannot be vertically divided into additional first individual areas, and the first individual area cannot be determined as including an image portion or a text portion, then marking the first individual area as an image area ("*Under the control of an image-segment discrimination control step 31,* ***the foregoing steps are repeated until there are no longer any undiscriminated image*** *segments. As a result, image-segment components of each image segment are discriminated"* column 14, lines 56-60);

otherwise, for each first individual area choosing a third background color from the first individual area ("*FIG. 7 is a diagram showing the detailed procedure of the background* ***image segmentation step 22.*** *A background color extraction step 211 analyzes the colors of the inputted intermediate image segment and judges whether the inputted intermediate image segment contains a color indicative of a background image segment."* column 11, lines 50-55);

determining whether the first individual area includes an image portion or a text portion based at least in part on the third background color ("*...and* ***second extraction means for extracting an image segment from the input color image*** *using data of the* ***image segment extracted by the first extraction means.***" column 4, lines 22-25);

if the first individual area is identified as an image portion, marking the first individual area as an image area (*"In the second embodiment, however, a binary image compressed by a compression method stored in the compressed-data* ***header is registered as "image-segment shape"****..."* column 22 lines 39-42);

and if the first individual area includes a text portion, marking the first individual area as a text area (*"****FIGS. 30A and 30B*** *are diagrams showing the form of image-segment data contained in compressed image-segment data. Image-segment data whose form is either of two types is held in dependence upon the image-segment component. More specifically,* ***in case of a "limited-color character*** *or line-drawing image segment", a "limited-color pseudo-halftone image segment",* ***a "limited-value character or line-drawing image segment"*** *or a "limited-value pseudo-halftone image segment", image-segment data of the form shown in FIG. 30A is held. ..."* column 22, lines 26-35);

Koga '711 does not expressly disclose processing the image areas with halftone processing; processing the text areas with line art processing; outputting the processed images and processed text as a whole.

Kanemitsu '603 discloses processing the image areas with halftone processing (*"When the circuit 3 detects a photo portion, the half-tone signal HTS is selected."* column 4, lines 38-39);

processing the text areas with line art processing (*"In the selection circuit 4, when the circuit 3 detects a character portion, the fixed slice signal FSS is selected."* column 6, lines 36 and 37);

and outputting the processed images and processed text as a whole (*"Ref FIG. 1 is a* ***schematic block diagram of a general image processing system. In FIG. 1****, reference number 100 denotes an original image of a document to be scanned, 101 an image scanner, 102 a personal computer with a display (CRT), 103 a laser printer and 104 an image reproduced by the printer.* ***The original image includes characters, ruled lines, and photos****.* ***They are scanned*** *by the image scanner 101 and converted to a multi-level signal and then converted to a binary signal having values of "0" or "1". The binary signal is input into the personal computer 102 and printed by the laser printer 103* ***so that the original image can be reproduced.*** *"* column 3, lines 1-13).

Koga '711 and Kanemitsu '603 are combinable because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by processing the image areas with halftone processing; processing the text areas with line art processing; outputting the processed images and processed text as a whole as taught by Kanemitsu '603. The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58). Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 21.

Regarding claim 22; Kanemitsu '603 discloses wherein the halftone processing comprises a dithering process ("*...the multi-level signal of the photo portions of the original image is binary-coded by **the half-tone processing method based on dithering for binary coding the multi-level signal based on a predetermined dither pattern**.*" column 3, lines 19-23).

Regarding claim 24; Koga '711 discloses wherein the method is carried out in at least one of a scanner and a fax (*"The **image processing apparatus and method** described below can be utilized in pixel-density conversion or zoomed output in a device, such as a color printer, which handles a color document image, in pixel-density conversion at the time of enlargement/reduction and output in a DTP system, and in pixel-density conversion and zoomed output **in a color facsimile**."* column 8, lines 22-28).

8. **Claims 4, 7, 16 & 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Koga '711 and Kanemitsu '603 as applied to claim 1 above, and further in view of Bearss et al. (US 5,987,221 hereinafter Bearss '221).

Regarding claim 4; Koga '711 as modified does not expressly disclose where the dithering process comprises a sampling mode dithering.

Bearss '221 discloses where the dithering process comprises a sampling mode dithering ("*FIG. 2 is a* ***block diagram of a threshold dither matrix*** *embodying orphan pixels according to the present invention.*" column 4, lines 23-24).See also ("*As will be understood by those of ordinary skill in the art, the placement of orphan pixels in FIG. 2 is merely exemplary, and* ***variations may also serve for a 3.times.3 sampling/detection window****. Moreover, the orphan placement may also vary given a different size window, such as for a 5.times.5 area window, a 1.times.3 area window, or* ***for a multiple sampling/detection window configuration****.*" column 6, lines 42-47).

Koga '711 and Bearss '221 are combinable because they are from the same field of endeavor of imaging systems (*"This invention relates in general to imaging systems..."* Bearss '221 at column 1, lines 7-9).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the imaging system as taught by the combination of Koga '711 by adding dithering process comprising a sampling mode dithering as taught by Bearss '221. The motivation for doing so would have been because it would improve the chances for discriminating between halftone image data and text/line art image data during rendering (*"...****the placement of orphan pixels in dither matrix 40*** *at least enhances the probability of having and detecting orphan pixels in the resultant raster image array 50, thus improving the chances for discriminating between halftone image data and text/line art image data during rendering."* Bearss '221 at column 7, lines 6-11). Therefore, it would have been obvious to combine Koga '711 with Bearss '221 to obtain the invention as specified in claim 2.

Regarding claim 7; Bearss '221 discloses where the dithering process comprises a sampling mode dithering ("*FIG. 2 is a* ***block diagram of a threshold dither matrix*** *embodying orphan pixels according to the present invention."* column 4, lines 23-24).See also ("*As will be understood by those of ordinary skill in the art, the*

placement of orphan pixels in FIG. 2 is merely exemplary, and ***variations may also serve for a 3.times.3 sampling/detection window****. Moreover, the orphan placement may also vary given a different size window, such as for a 5.times.5 area window, a 1.times.3 area window, or* ***for a multiple sampling/detection window configuration****."* column 6, lines 42-47).

Regarding claim 16; Bearss '221 discloses wherein the component configured to process the images with a dithering process is further configured to process the images with a sampling mode dithering (*"FIG. 2 is a* ***block diagram of a threshold dither matrix*** *embodying orphan pixels according to the present invention."* column 4, lines 23-24).See also (*"As will be understood by those of ordinary skill in the art, the placement of orphan pixels in FIG. 2 is merely exemplary, and* ***variations may also serve for a 3.times.3 sampling/detection window****. Moreover, the orphan placement may also vary given a different size window, such as for a 5.times.5 area window, a 1.times.3 area window, or* ***for a multiple sampling/detection window configuration****."* column 6, lines 42-47).

Regarding claim 23; Bearss '221 discloses wherein the dithering process comprises a sampling mode dithering (*"FIG. 2 is a* ***block diagram of a threshold dither matrix*** *embodying orphan pixels according to the present invention."* column 4, lines 23-24).See also (*"As will be understood by those of ordinary skill in the art, the placement of orphan pixels in FIG. 2 is merely exemplary, and* ***variations may also serve for a 3.times.3 sampling/detection window****. Moreover, the orphan placement may also vary given a different size window, such as for a 5.times.5 area window, a 1.times.3 area window, or* ***for a multiple sampling/detection window configuration****."* column 6, lines 42-47).

Examiner Notes

8. The Examiner cites particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully considers the references in its entirety as potentially

teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or as disclosed by the Examiner.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARCUS T. RILEY whose telephone number is (571)270-1581. The examiner can normally be reached on Monday - Friday, 7:30-5:00, est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Marcus T. Riley
Assistant Examiner
Art Unit 2625

/Marcus T Riley/
Examiner, Art Unit 2625

/David K Moore/
Supervisory Patent Examiner, Art Unit 2625